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Objectives – Not much has been published on the undergraduate training on antimicrobial stewardship. However, potential variations between countries could contribute to the observed differences in (the quality of) antibiotic use. Our aim was to survey a sample of European medical schools regarding teaching of 'prudent antibiotic prescribing' in the undergraduate curriculum.

Methods – In 2013 we performed a cross-sectional survey in 14 European countries (Belgium, Croatia, Denmark, France, Germany, Italy, Netherlands, Norway, Serbia, Slovenia, Spain, Sweden, Switzerland, UK). Proportional sampling was used resulting in the selection of 1-4 medical schools per country. A standardised questionnaire based on a literature review and validated by a panel of experts was sent to lecturers in infectious diseases, medical microbiology and clinical pharmacology.

Results – Data were provided for 11 countries; 27 medical schools were included in the study. Prudent antibiotic use principles were taught in all but one medical schools, but in only 31% in the framework of a national programme. Interactive teaching formats were used less frequently than passive formats: clinical case discussions (85%), active learning assignments (50%), web-based server software learning platform (35%), E-learning (23%), role plays (15%) versus lectures (100%). The teaching was mandatory in 92% of the schools, and started pre-clinically (i.e. before the medical students begin their clinical training) in 73% of them. We observed wide variations in exposure of students to the selected principles of prudent antibiotic use between countries, and within the same country. Poorly covered major principles are listed in the table. 77% of the respondents fully agreed that the teaching of these principles should be prioritised in the future.

Conclusion – Teaching of prudent antibiotic prescribing principles shows wide variations in European medical schools, and could be improved. National and European programmes for development of specific learning outcomes or competencies in antimicrobial stewardship are urgently needed.

Table. Coverage of 10 prudent antibiotic use principles in the 27 surveyed medical schools.

Principle	Stated as 'well covered' Mean, %
Topic 1 : Bacterial resistance	
Extent and causes of bacterial resistance in commensals	41
Lack of development of new antibiotics	41
Topic 2: Diagnosis of infection	
Practical use of point-of-care tests	37
Topic 3: Indications for antibiotic prophylaxis / curative therapy	
Principles of surgical antibiotic prophylaxis	56
Topic 4: Initial empiric/directed therapy	
Documentation of an indication for antibiotics in the clinical notes	41
Estimating the shortest possible adequate duration	37
Topic 5: Reassessment of antibiotic therapy	
Reassessment of the antibiotic prescription around day 3	52
Stopping the empiric antibiotic therapy around day 3 if the diagnosis of bacterial infection is ruled out or highly unlikely	41
Topic 6: Quality of care	
Audit and feedback assessing prescribing practice	7
Topic 7: Communication skills	
Explaining to the patient the absence of an antibiotic prescription	22